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DISEASES OF THE NERVOUS SYSTEM

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DISEASES of the NERVOUS SYSTEM

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A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

EDITORIAL COMMENT

The Emotional Factor in Disease

The willingness to concede that emotions cause visceral disorders, yet the unwillingness to acknowledge their physical effects, is a paradox frequently observed. It is true that there is room for study of the emotions; however, it is not to be overlooked that much is known of their nature and effects. The facilities for their existence is a biological heritage that is mobilized early in life before symbols are used in the form of words and ideas. Fundamentally, they serve the organism in the form of defensive and offensive functions, however, at times their effects are subtle and fickle, and disguised in the form of physical complaints.

One of the most characteristic features of emotional states is their tendency to diffuse throughout the organism, serving thereby as regulative functions. In this manner, they bring the organismal parts and functions into a state of oneness, wherein the various part activities are correlated for a purpose and directed to an end, this end being dependent upon the situation at hand. It is out of these functions of the integrated organism that patterns of preparedness and states of readiness arise, the amount of "stir," registration, and participation of various organs depending upon the organization of the individual, and the nature and meaning of the environmental situation with which he has to cope.

From the above it is seen that emotional states are not simple processes involving an organ or two; rather they are experiences of the *person*. They are "all" of the person propositions, making for attitude, tension, preliminary action, and even engagement. Emotions then serve to unify structures and functions for the moment, calling for physiological changes of wide variation and degree, but physiological to be sure with all sorts of adjustments and readjustments within the person.

Early in man's existence he reacted without thought, and lived in an environment devoid of present day restrictions. As a rule, his emotional states were relatively short lived, but today it is different. Under the present scheme of things, with standards of propriety and sobriety, he cannot let himself go. If for no other reason, it is because he has a superstructure of thought that makes for caution, supposition, and a knowledge of unpleasant and defacing results that might follow; and the evolution of group regulations and restrictions have put upon him demands for self-restraint. Thus, the emotions have been harnessed and brought under control. Nevertheless, their presence and influence assuredly exist.

The emotions of present day man are less pure in culture than his predecessor; rather they are blended and woven into a texture of attitude and action usually consistent with the fact that things have been given thought. They are not the unsubordinated explosive and impulsive actions of his more primitive days. Also, today emotional states are drawn out over longer periods of time, not as fear but as anxiety, anticipation, and precarious forebodings; not as anger, but as resentment, grudges, grievance bearing and retaliation: not as sexual conquests in the crude sense, but as imaginative indulgences and hedonistic experiences that have a wealth of resources from which to draw in the "civilized," "cultured" world of which their host is a part. Thus we see tension from restrained or drawn

(Continued to page 287)

Sub-Dural Hematoma

A Clinical Review

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Washington, D. C.

Dr. Williams graduated from the University of Chicago Medical School in 1938 and served two years at the City Hospital, Cleveland, Ohio, immediately following graduation. During his second year there, he was a Resident in Neurology and Psychiatry. He is now at Washington, D. C., serving as Resident in Neurology and Neurological Surgery at the Gallinger Municipal Hospital. This is his first medical publication.

Subdural hematomas are collections of blood under the dura and outside the arachnoidal membrane. They are of sufficient frequency to have attracted the attention of anyone treating head injury cases. This paper will be confined to those cases in which the hematoma existed, or was presumed to exist, within the cranial cavity. There may also be subdural hematomas of the cord, but we shall not consider them in this discussion. The purpose here is to present the outstanding symptom of the subdural hematoma and to depict its hospital course, satisfactory or otherwise.

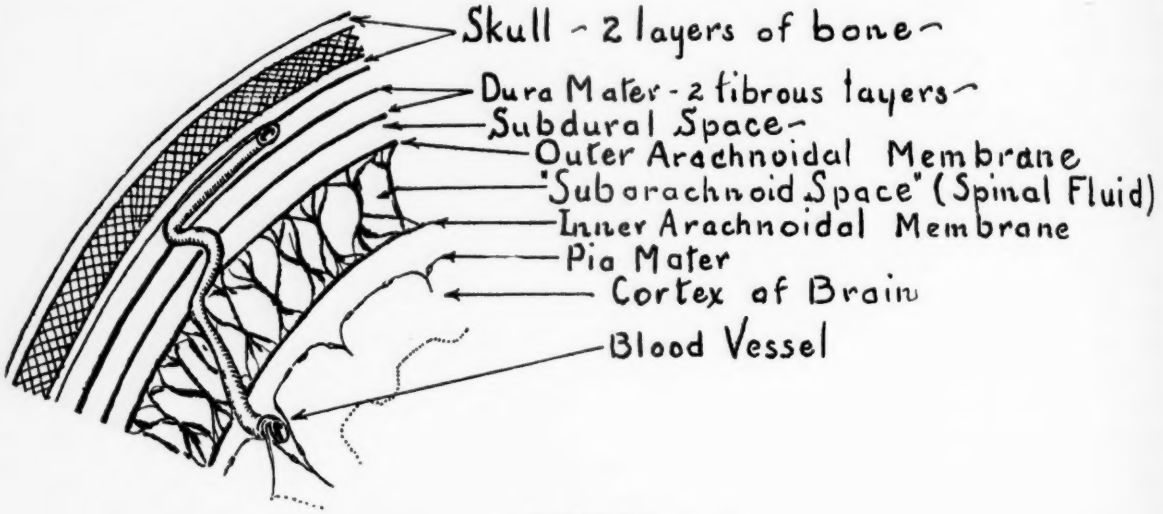

FIGURE I.

A short anatomical consideration of the encasing membranes of the brain may be helpful (See Figure I). Closely applied to the inner surface of the skull and even intruding itself into the sutures lies a glistening, bluish white, tough, fibrous membrane, the dura mater. It acts as the inner periosteum of the bone and carries within its two tough, fibrous layers, arteries, veins and nerves as well as the large and well-known venous sinuses. Next inside is the thin web-like avascular arachnoid membrane. It is between these two, like the potential space between two pages of a book, that the subdural hematoma forms. The arachnoidal membrane limits the circulating cerebrospinal fluid (which is beneath in the "subarachnoid space"). Only when blood gets through into this subarachnoid space does the spinal fluid appear pink or bloody. Closely applied to the brain is the pial-glial membrane or the pia mater. This dips down with each convolution and penetrating blood-vessel. Beneath it is the cortex proper.

Most authorities recognize two types of subdural hematomas: the acute and the chronic. The acute subdural hematoma results immediately after injury to the cranium or its contents. This damage may include edema, bruising and laceration of the brain and fracture of the skull. Its pathology is that of free and not infrequently unclotted blood in the subdural space. The sources of the blood are three: (1) any of the large venous sinuses of the brain may be either torn or punctured by the fragments of a fractured skull; (2) the communicating venous branches from the depths of the brain, which traverse the subdural space from the surface of the brain to the venous sinuses, may be sheared off by any quick jolt at right angles to their course; and (3) the vessels in either

the dura or the pia may themselves be ruptured—the latter being apt to result in a subarachnoid hemorrhage as well. This bleeding may be arterial as well as venous and tends to be extensive and rapid. Regardless of the occurence of subdural blood, the clinical picture is determined by the degree of direct injury to the brain. The patient is unconscious mainly because of the cerebral edema or brain laceration. Since these direct brain insults may be protean in their clinical manifestations, the detection of an associated hematoma is most difficult.

The chronic subdural hematoma is the dark horse of head surgery. It not infrequently presents itself as a complete surprise to the surgeon who is drilling for a ventriculogram, or to the pathologist in his routine examination of the cranial contents.

Grossly, the hematoma appears to be a collection of old blood. It is either a solid clot with a fibrous capsule lying under the dura, or one partially liquified in the center.

The microscopic appearance of the chronic hematoma and its limiting structures introduces us to the arguments regarding its precise origin.

There are two points of view regarding the origin of the chronic hematoma. One group supports the theory that the blood originates from perforations or tears of those vessels leaving the brain substance to enter the large venous sinuses. These vessels sometimes travel a distance of a centimeter diagonally between the arachnoid and the dura without support. When the head is struck, especially in an anteroposterior direction, the momentary inertia of the brain shears or rends these veins and thus produces subdural bleeding. This escaped blood collects into a pool, which, having first increased the intracranial pressure by its presence, tends later to restrain further bleeding. Within the first twenty-four hours fibrin is deposited throughout the margin of the clot and the dura is stimulated by its intimacy to the production of fibrous tissue which proceeds over the inner convexity of the clot. By the fourth day there is a definite brocade of fibroblasts enclosing the clot whose inner substances are beginning to degenerate. The longer the clot remains undisturbed, the thicker this capsule becomes.[1]

More recently, new evidence has been presented to contest this older concept of origin. It is the contention of a second group of investigators that the bleeding is really *intra*-dural. Mainly supported by the work of Baker[2] and de Morsier,[3] this is an extremely attractive hypothesis. Microscopically the dura is composed of several layers. Most important are two tough fibrous layers and an interposed capillary layer. It is in this capillary layer that the bleeding originates. The two layers of fibrous tissue split to form the inner and outer membrane of the clot. In older people the dura tends to be more brittle and the inner fibrous layer may shatter to release the blood into loose tissue beneath.

While this theory admits injury as a causative factor in many cases, its proponents state that in some cases the agent responsible is some factor working directly on the vascular system, such as syphilis, alcoholism and blood or blood vessel disturbances, such as leukemia or vitamin deficiencies.

In either case, some adequate explanation should be forthcoming as to why hematomas may be present for a length of time exceeding the period of acute symptoms. Or, why a "latent interval"? An examination of the specimens will soon reveal that fresh bleeding is not the cause of the appearance of the symptoms.

Gardner[4] has propounded a reasonable explanation. The liquifaction proceeding within the hematoma offers a fluid very rich in protein molecules. This exerts a high osmotic tension on the surrounding fluid, drawing it into the clot, and thus, if not actually expanding it, at least acting to prevent its collapse and later disappearance by absorption.

Analysis of Material

A series of fifty cases of subdural hematomas have been taken from the files of the Cleveland City Hospital for study. These are selected only because they bear a final diagnosis of subdural hematoma. On the general medical and surgical wards, the correct diagnosis was made in thirty-four or sixty-eight per cent of these cases. The remaining thirty-two per cent were revealed at autopsy.

As mentioned before, other factors may be at work either to cloud the diagnosis, or to render void any curative measures that might be taken. This is especially true of brain

tears and frank skull fractures. In the acute hematomas, of which there were twenty-one, or forty-two per cent of the total, fifteen had skull fractures with five ultimately recovering from this double insult. Two were cases of depressed skull fracture in which elevation was attempted and a hematoma discovered. Because these common companions of the acute hematoma are so dangerous, it is not surprising that the mortality is high. Ours is 66.6 per cent. Munro,[1] in a generous estimate based on combined reports totaling 120,000 patients with head injuries, places the total mortality at twenty-four per cent. It is, therefore, evident from our series that having a subdural hematoma roughly *trebles* the patient's chance of dying.

It is about the chronic cases that most of the literature on subdural hematoma is written. These cases concern individuals who seem clinically to have recovered from the immediate effects of the head injury. Here one is most apt to find the classic subdural triad of trauma, latent interval and coma. This should be modified to include convulsions, for in little less than half of our chronic cases this was the presenting symptom. Just exactly at what point an acute condition becomes chronic is a little difficult to decide as persistent headache may be or may not be a significant symptom following injury. I have arbitrarily chosen six days after the injury and decided to call all those hematomas showing themselves after six days chronic hematomas.

This figure of six days may perhaps be contested, but it is believed that those patients who have survived six days after their initial trauma are reasonably assured of continued survival, providing their hematomas be evacuated. Pathologically, hematomas of this age may be shown to present definite evidence of organization by fibroblastic growth.

Twenty-nine of our cases fall into this chronic group. Latent intervals varied from the low figure of six days to a high of four years. Of these twenty-nine, eighteen died—a mortality of 62.3 per cent. We cannot turn here to fractures and brain lacerations as an explanation for these deaths, for, if lacerations are to prove fatal, they will assert themselves before the hematoma becomes a "chronic one".

There is one almost constant feature of all hematomas, both chronic and acute, namely, chronic alcoholism. This has been noted by many writers as far back as 1859,[5] and today it is believed by many that it is actually responsible for the hematoma by acting directly on the blood vessels to produce bleeding—not just rendering the patient sufficiently unstable to facilitate his falling on his head. As a matter of fact, alcoholism, acute and chronic, was a common diagnosis and in several instances the only diagnosis. Convulsive phenomena were attributed to it, though in some cases there were suggestive evidences, neurologically, of focal insult.

Other diseases insert themselves for consideration and tend in many instances to cause the diagnosis to veer away from subdural hematoma. Syphilis occupies a prominent place here. In three cases uremia was diagnosed ante-mortem. The erroneous diagnosis of brain tumor, so frequently made in subdural hematomas, occurred three times in our series. One of our patients had been committed to a state institution as insane.

There is no dispute over the treatment of subdural hematomas. Surgical exacuation of the clot is the only recognized method. Twenty-six of our thirty-four diagnosed patients were surgically explored. Our ultimate survivals numbered eleven and in these the results were uniformly good. This means a distressingly high mortality rate of fifty-seven per cent, and a study of these cases reveals the answer. For deaths recorded in this group there are four reasons:

(1) Fractures of the base of the skull are almost as difficult to demonstrate by x-ray as they are to nurse back to health. Two of the acute cases had basilar fractures and in spite of adequate removal of the clot went on to death in their usual way.

(2) Because of the non-dependable focusing signs of a subdural hematoma, it is considered by many surgeons unsafe to open only one side of the head. It is a reasonable conjecture that had bilateral trephine been performed instead of a unilateral exploration, three more of our cases would have had a better chance for recovery. Postmortem examination revealed a hematoma on the opposite side in all three.

(3) The immediate post-operative nursing care of head cases is a most vital part of the

program for recovery. Senses are dulled and subjective appreciation is at a low ebb. For this reason, constant attention must be given these patients to prevent the occurrence of serious complications. Broncho-pneumonia is the foremost of these. An ascending kidney infection is also a serious offender in such cases, where loss of bladder control with urinary incontinence is almost the rule. Eight patients succumbed to either or both of these frequently avoidable occurrences.

(4) Finally, the condition of the patient may be so critical following an injury that even evacuation of the subdural blood does not alter his progressive downward course. Such was the case with two patients, both of whom died a few hours after admission.

Diagnostic Aids

The preceding remarks enable us to draw certain conclusions. First, some criteria of diagnosis, perhaps rather flexible criteria, may be established which will be of great value in rendering the proper treatment. It is obvious that if a subdural hematoma is not considered, this diagnosis is impossible. A history of adequate head injury can usually be obtained or deduced in about ninety per cent of all cases, but probably the one lead of paramount importance is the pupillary reaction. Whether it is the inequality of pupils or the fixation to light of one or both pupils (present in two-thirds of our cases), it means that there has been a special local insult to the brain. Simple concussion rarely gives signs of focal damage, while in the more severe bruising and tearing of the brain, there is usually an accompanying profound shock with total absence of deep muscle tendon reflexes.

Whereas the pupillary reflex offers valuable aid in determining the presence of a subdural hematoma, it is valueless in predicting on which side the lesion may be. This inconsistency fits well with the unreliability of so-called localizing signs. The finding of a hematoma on the same side as a paralysis or weakness of the arm and leg is frequent. The reason for the frequency of this observation is clear. Any large intracranial tumor pressing on one side of the cerebrum displaces it to the other side, causing the opposite cerebral peduncle to impinge upon the tentorium and tends to interrupt the large cortico-spinal or pyramidal paths.[6] It is not due to pressure of the opposite side of the brain against the skull, for this would give irritative phenomena, and those found are signs of interrupted function rather than signs of distorted function. Aside from the pupillary association with the third nerve, the seventh or facial nerve is perhaps the most frequently involved of the cranial nerves. Jacksonian epilepsy is much more likely to be caused by lacerations and contusions of acute head injuries and by tumors in those cases suspected of being chronic subdural hematomas. Because of the wet state of the brain in acute cases it is evident that very changeable peripheral signs are possible and this is frequently found. Alternating and vanishing Babinski signs were not uncommon in our group. Headache and associated dizziness were of all symptoms most common. They have no diagnostic value. Convulsions, generalized, and coma have already been mentioned.

The spinal fluid changes are not at all uniform in cases of subdural hematoma. In the acute cases one is very likely to find pink to frankly bloody fluid. Centrifuging this should give a clear fluid. It is helpful to find the pressure increased, but unfortunately this is not always the case.

About one-half of the chronic cases will have a xanthochromic fluid. In the absence of red blood cells, this is an extremely significant finding. Here again, as in the acute hematoma, it is not uncommon to find a normal pressure, although most observers report a moderately increased pressure in slightly more than half the cases. Gardner[7] says, "It is important to suspect a subdural hematoma when the clinical picture suggests a high degree of intracranial pressure and the spinal puncture fails to reveal it. Observance of this dictum has permitted us to rescue several patients who otherwise most surely would have died." Choking of the optic discs is frequently found in these cases. A valuable aid to diagnosis is the Ayala Index.* This, perhaps, would be most helpful in dif-

* The Ayala Index is a number obtained by dividing the final manometric spinal fluid pressure by the initial pressure and multiplying by ten. (the number of cubic centimeters of fluid withdrawn). An index below 5.0 favors a space occupying intracranial lesion, such as a hematoma. It is merely an expression of diminished spinal fluid reserve[8].

ferentiating between subdural hematomas and early neurosyphilis, chronic alcoholism and a cerebral vascular accident.

Encephalography has been advocated as a valuable diagnostic aid. Some claim for it a high percentage of diagnoses. Dandy[9] prefers ventriculography. He describes the ventricular distortion seen by him and emphasizes the obliquity of the third ventricle shadow which he regards as the most important single finding. While encephalography is easier to perform, the results in general are not as uniformly satisfactory as ventriculography, which carries the added advantage that many times a hematoma is encountered in the process. Properly done, there need be no greater operative risk to ventriculography than there is to exploratory laparotomy. Finally, more especially in acute cases, changes in the patient's general condition warrant most careful scrutiny for any signs of increasing intracranial pressure, deepening stupor, slower and fuller breathing, a rising blood pressure and a falling pulse. These should indicate that the patient is in dire straits and that operative intervention may be indicated.

Treatment

The operation itself should be aimed at evacuating as much of the hematoma as possible and, in chronic cases, the removal of as much of the "capsule" as possible. While some maintain that the capsule may be safely left behind, hematomas have been known to recur in the same site and, therefore, it is reasonable to extract all that is compatible with the patient's condition. Whether evacuation is done through trephine holes, or by turning down a flap of the skull, is mostly a matter of personal taste with the operator. Whichever method is chosen it is urged that bilateral exploration be carried out in all cases, for our figures show twenty-two per cent may occur bilaterally, or equivocal signs may lead the surgeon to investigate the wrong side.

As mentioned before, postoperative nursing care is a very significant adjuvant to the treatment of head cases, hematomas and otherwise. Scrupulous attention to oral hygiene may prevent many cases of supurative parotitis and pneumonia.

Postoperative dehydration should be conducted along those lines similar to the general care of head injuries,[1] but must not be over-done as this is almost worse than doing nothing. It is not necessary to limit the patient's fluid intake to accomplish dehydration. This is best done by saline catharsis, saturated solutions of magnesium sulfate as retention enemas and intravenous doses of fifty per cent glucose every four hours for a day or two coupled with spinal drainage. Sedation should consist of barbiturates or paraldehyde. Under no circumstances should morphine be given, as it is a respiratory depressant, and must be avoided in all head injury cases. Stimulants such as caffeine, sodium benzoate and coramine are helpful in a case when the vital centers appear endangered. Transfusion should not be neglected if the patient's condition warrants it, either because of shock or anemia.

A high Fowler's position, provided the patient is not in frank shock, is advisable in postoperative cases for a two-fold reason—intracranial pressure is less and the tendency to develop pulmonary edema is less.

Finally, the development of decubitus ulcers in a postoperative patient should be kept in mind. These can be avoided by frequent change of position, massages and rubs.

Summary

The anatomical and clinical features of acute and chronic subdural hematoma are discussed together with some comments on the mechanism of formation.

The pitfalls in diagnosis are presented and some valuable symptoms and clinical signs are offered to make a differential diagnosis possible. The fact that concomitant diseases, particularly alcoholism, may obscure the diagnosis is emphasized.

Hematomas should be treated surgically and this procedure should not be delayed long enough to allow irreparable injuries to the brain to supervene. The head should be explored on both sides.

Postoperative care should include dehydration therapy and every attempt to prevent complications.

City Hospital.

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The History and Development of Modern Psychiatric Nursing

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Introduction

Inhuman, cruel treatment of the mentally ill in past centuries was motivated by superstitious and false concepts and many of these have been handed down to the present generation. Psychiatrists find practically every patient's situation highly colored with these false impressions. Relatives, filled with similar suspicions, often hesitate to trust their sick one to the care of any psychiatric hospital. In developing an educational exhibit* we made a historical review of psychiatric treatment which gave us many clues as to the origin of these fears and makes more intelligible the lack of understanding.

Primitive Period

Records show that the treatment accorded the mentally ill as far back as 4000 B. C. was often more humane and understanding than that during the early part of the 20th century. We find that Imhotep, an Egyptian, was the first physician of whom there is historical record. We believe that he must have treated mental illness, as among his titles were "Master of Secrets" and "Bringer of Peace". At this time, altars were usually erected near some natural phenomenon such as a large tree or a waterfall, held to be sacred. Healing at these shrines was carried out through therapeutic sleep or dreams that were thought curative in effect. The patients were placed on cots, and at various times during the night attendants disguised as angels would visit them and whisper words of reassurance or advice. Naturally, the highly imaginative individual, under the stress of his fears and emotions, responded readily to this form of suggestion.

During this primitive period, according to the Bible, most mental illnesses were believed to be the result of wrong doing. King Saul had recurrent depressive attacks which were

* American Psychiatric Association, American Medical Association, and American Public Health Association, San Francisco, June, 1938: scientific exhibit "The History and Development of Modern Psychiatric Nursing".

ascribed to an "evil spirit sent down by God to trouble him." Through the harp playing of David, he was cured of one attack. This is one of the first records we have of music as a therapeutic agent.

Nebuchadnezzar, the Babylonian King, was stricken with madness for a period of seven years: "He roamed the fields as a beast, and did eat grass as the oxen, and his body was wet with the dew of heaven, 'till his hairs were like eagle feathers, and his nails like bird claws." It was probably such a form of melancholia as this that gave rise to the term lycanthropy. Patients so afflicted were neglected, became dirty and unkept, with the hair and nails growing to such an extent as to give people the idea that the person had been changed into a wild beast. Such patients tended to avoid all social intercourse and sought solitude by wandering into the lonely places in the woods, away from their fellow men.

Classical Period

During the century before Christ, Cicero declared that melancholy was due to painful emotions. Hippocrates, 400 B. C., had stripped medicine of much of its superstition. He stated mental illness was not due to superhuman powers, but attributed it to natural causes. He taught that it was more important to know what sort of individual had the disease, rather than what sort of disease the individual had. (He stated, "Men ought to know that from nothing else but the brain come joy, despondency and lamentations, and by the same organ we become mad and delirious, fears and terrors assail us, some by night and some by day.")

Aesculapius (124 B. C.) also made important contributions to early psychiatric knowledge and practice. He prescribed diet, massage, bathing, and exercise for mental patients under his care. He was worshipped as the "God of Healing," and shrines for the relief of the sick were built to his memory.

In the second century, hysteria was believed due to the wanderings of the uterus through the human body. To induce the uterus to return to its proper position, foul smelling substances were applied to the nostrils and fragrant, sweet substances to the genitalia. The uterus was believed to be attracted to fragrant odors and to avoid disagreeable ones.

Galen, the great Roman physician, refused to employ such methods. He did not fail to recognize the importance of mental treatment and taught that "to be a good physician, one must also be a good philosopher."

During the 4th century A. D., vigorous measures such as blood letting and purging first came into use. Patients were ordered bled at certain times of the month, according to the signs of the Zodiac. After a bleeding, the patient took emetics once a week for several weeks, followed by drastic purging. It is doubtful if even the strongest mad man was able to maintain his enthusiasm after such treatment.

Transition Period

From the times of early Greek and Egyptian medicine up to the death of Galen, 200 A. D., progress in psychiatry and medicine was made. After Galen, we find medical progress took a backward trend. We have seen that the mentally ill were treated with both mild and severe measures.

Hellebore was a widely used drug in the treatment of the insane, and great healing power was attributed to it. It was used as a drastic purgative for "the mad and furious men and for melancholy, dull and heavie persons." "If the imaginations mislead and melancholia is present, give black hellebore to purge; but if excitement, give white hellebore as an emetic." Today hellebore is used in the manufacture of insecticides.

Prescriptions for mental symptoms, taken from English documents written in 950 A. D., read as follows:

"Against mental vacancy and against folly, put into ale, bishopwort, lupins, betony, the southern or Italian fennel and water agrimony with cockle; then let the man drink."

"In case a woman suddenly turned dumb, take pennyroyal and rub into dust, wind it up in wool, lay under the woman, and it will soon be well with her."

"Against a woman's chatter take a night fasting, a root of radish; that day her chatter cannot harm thee."

"For devil's sickness and apparitions, give wolf's flesh sodden."

"For sleep, lay a wolf's head under the pillow; the unhealthy shall thus sleep."

In the tenth, eleventh and twelfth cen-

turies, it was the rare physician who treated severe nervous disorders with kindness and sympathy. During this period mental illness was thought to be caused by demons, and treatment was rendered accordingly. Demons were expelled by three methods; first, by the priest laying hands on the patient and uttering holy words distasteful to the demons; second, by disgusting or offending the demons; and third, by punishing and torturing them. Demons lurked in the patient's hair, so he was plunged into a well head first and held under water or ducked several times, and was bound and left through the night. If by morning the patient had freed himself, he was believed cured; if not, he was considered hopeless. It was not unusual to find him not only bound, but dead.

Other mental cures for hallucinations consisted of feeding the patient raw wolf's flesh, opening veins under the tongue, anointing "back bones" with a balm of earthworms and bats and using mouth gags and witch's bridles to check the noises of women. Walnuts were used for seizures. The shell represented the skull, the nut the brain with its convolutions, the husk the scalp, and each part of the nut was used for treatment of the part of the head considered diseased.

Precious stones were also considered of benefit. The bezoar stone removed sadness and made happy and carefree the person who used it. The onyx caused sleep. The topaz healed the person of his "passion of lunacy."

One of the more elaborate forms of treatment for melancholia consisted of shaving the head, followed by a cataplasm on it. Great benefit was supposed to be derived also from a mixture of herbs, holy water and foreign ale. Holy water was made more effective by the addition of salt, which the devil abhorred.

With development of witchcraft superstitions in the 15th century, great waves of hysteria swept the country. This period has been termed the psychopathic period. Medical men did not recognize the symptoms of insanity or treat it as a natural illness. Quoting Maxime du Comp, "We may say the doctor shared the insanity of the maniacs. The lunatic was no longer a patient, not even a man, but a wicked demon. In the horror that he inspired, they declared him possessed of Satan and threw him into flames."

To seek out and eliminate witches became not only a social, but a religious duty. Millions of lives were sacrificed through the literal translation of that passage in the Bible, "Thou shalt not suffer a witch to live" (Exodus XXII:18).

It was believed a favorite device of the devil to induce human beings to sell their souls for supernatural powers. Witches who thus entered league with Satan worked the deeds of black art. Witch-possession was diagnosed by hysterical stigmata, spots of anesthesia, seizures and trances.

First Half of Modern Period

Evolution of Mental Hospitals—The evolution of mental hospitals began in the year A. D. 1250, when the mentally ill were first received in a general hospital at Cairo, Egypt.

In the year 1537, a building was erected in London for the reception of fifty lunatics. This was called Bethlehem Asylum, later nicknamed "Bedlam" because of the chaotic conditions which existed there. The horrors of Bedlam have been perhaps the greatest horrors the world has even known; yet from out its walls have come some of the greatest reforms in the care of the sick. In 1820, Bedlam was one of the great sights of London, and keepers were permitted to exhibit boisterous and violent patients to the public, charging a fee of one penny per head, which they retained for their personal use.

Other such asylums were erected in which conditions were deplorable. Patients slept in rags on piles of straw, which often were not changed when needed. Most incredible forms of torture were devised and approved by those in charge:

Machines which revolved at a high rate of speed whirled the patients through space. Surprise baths plunged patients, taken to bathe in the usual way, through the bottom of the tub into deep, cold water in utter darkness. Another form of the surprise bath was a gaily decorated pavilion built on a bridge over deep water, which seemed to welcome the visitor, but when the patient entered under its roof, he plunged headlong into the water.

Other horrors included starvation, horrible odors and sounds from patients in slimy dungeons which were without light or ventilation and infested with vermin. Many of these sick

people were made to wear heavy iron bracelets and anklets and were chained to the walls by means of collars. It hardly seems possible that this inhuman management was tolerated until the middle of the last century.

Hydrotherapy, in the form of a douche directed at the patient's head, was applied with ruthless force, generally as a punishment for uncleanliness, violence or excitement rather than as treatment for illness.

Reforms—In France in 1792, Phillipe Pinel, guided by the belief that the insane were sick people, set about to improve conditions. At about the same time, William Tuke in England began his reforms in the care of the mentally ill. At the risk of their own lives and liberty they released many chained patients and provided air, light, recreation and occupation. They first demonstrated conclusively that by kind management patients became far less difficult.

In 1851, the Belgian government took charge of a colony for mental patients at Gheel. Tradition tells us that about 700 A. D. a miraculous cure took place there. It seems that the princess Dymphna had been driven insane by the behavior of an incestuous father and had fled to Gheel, where she was martyred. Thus, the shrine at Gheel was dedicated to St. Dymphna. Since that time, the village of Gheel has become world famous, and the mentally ill from all parts of the world have gone there to avail themselves of the family system of treatment. Patients are farmed out on neighboring farms and in the homes in the village. This individual care and the associations with well people is believed to be of great benefit and the recovery rate is high. That many of these cures are real there can be no doubt; and that faith, autosuggestion, etc., can play a great part has long been demonstrated in mental therapeutics. In 1877, modern laboratories and workers trained in the care of psychiatric patients were established.

Modern Psychiatric Treatment

Among the important men in modern psychiatric research were Emil Kraepelin (1856-1926), who classified mental diseases; and Jean Charcot (1825-1893), whose outstanding contribution was the effect of hypnotism and suggestion in hysteria. His pupils, Freud and Janet, are outstanding in the field of psychiatry. Janet published "Psychastenia" and "Studies in Hysteria" in 1903. Freud founded new doctrines, declaring that all neuroses represent some disturbance of the sexual functions. Although most psychiatrists refuse to accept this radical theory, he made most valuable contribution to modern psychiatry. Famous pupils of Freud, such as Adler (Individual Psychology) and Jung (Free Association method) and many others have contributed research to analytic psychiatry.

American Psychiatric Hospital Development

In Colonial America, as in Europe, the insane were treated as prisoners rather than patients. In 1639 the Hotel Dieu in Quebec, Canada was the first hospital in America to care for the insane. The first hospital in America built *exclusively* for the treatment of the insane was Eastern Lunatic Asylum in Williamsburg, Virginia, in 1773, now known as the Eastern State Hospital.

The first hospital in the *United States* to admit mental patients for curative treatment was Pennsylvania Hospital in 1752. Dr. Benjamin Rush, who has been called the Father of American Psychiatry, was the hospital's first chief. He pioneered occupational therapy for patients.

The treatment methods begun in Pennsylvania Hospital were probably the first step toward treating insanity as an illness. The patients were locked in strong prison-like underground cells. Both men and women were kept there. Some of them were given beds, but most of them clean straw. Many patients were quite naked and the fiercer ones were chained to the wall. Treatments such as bleedings, purging, and blisters were carried out.

The gyrator and tranquilizer were being used at this time in the management of difficult patients. The tranquilizer, invented by Benjamin Rush, was intended to reduce the pulse through lessening the motor activity of the patient's body. It consisted of a chair to which the patient was strapped hand and foot, together with a device for holding the head in a fixed position.

The gyrator consisted of a rotating board, to which patients were strapped with their heads farthest from the center. It could be rotated at a terrific rate of speed, causing the blood to rush to the head, thus produc-

ing an effect opposite to the tranquilizer.

Due to the increase in population, and its closer grouping in cities and towns, and to the ever changing social order, it became necessary for each community to provide places for the mentally unfit. The logical solution seemed to be that of grouping them into centrally located institutions for custodial care. So in 1833 Worcester State Hospital, one of the first of these asylums, was built, and this was followed by the building of many others. As in most instances one such hospital was thought sufficient for each state, those institutions in the thickly populated areas were soon horribly over-crowded. Gradually then it became the custom to send "incurables" to various jails or work houses in order to accommodate new cases. If a patient had not recovered and been discharged within twelve months he was given up as incurable.

It was about this time that Dorothea L. Dix, a school teacher in Massachusetts, while visiting at the East Cambridge house of correction, became aroused at the treatment of these persons, many of whom she found were mentally sick. She started an investigation of jails and work houses with particular reference to the care of the mentally sick housed there. In 1843 she submitted her report to Congress, in which she stated, "I have found the insane confined in cages, closets, cellars, stalls, pens; chained, naked, beaten with rods and lashed into obedience." Miss Dix was directly responsible for the founding and enlarging of 32 mental hospitals in the United States and abroad.

In 1844, the Association of Medical Superintendents of American Institutions for the Insane was founded to advance the interests of the mentally ill, to organize the knowledge of psychiatry then available, and to build upon it. These men were spoken of as "The Original Thirteen," and this organization later became known as the American Medico-Psychological Association until 1921 when it adopted its present name, "The American Psychiatric Association." The resolutions passed by this association from year to year are largely responsible for the development in the care of the mentally ill.

With the never ceasing inflow of mental patients to the poor houses, the question of removing these people became a vital one. In 1855 a meeting was held in New York by the County Superintendents of the Poor. At this meeting the resolution was adopted that the state should make provision for all its insane. As a final result the Willard Act was passed, which provided for the care of chronic mental patients in asylums and separated them from the acutely ill, who were kept in hospitals for curative treatment.

The Willard Act met with much opposition on the basis that it deprived chronic cases of curative treatment in institutions and that it was impossible for a physician to make an accurate decision as to whether or not a patient is incurable. As the result of these and other arguments, a compromise was reached through the introduction of the colony or cottage system. The cottage plan encouraged the distribution of patients into small cottages instead of one massive building. Kankakee State Hospital was one of the first to adopt this system. The colony system was initiated with the purchase of a tract of 250 acres which was added to the State Hospital at Kalamazoo, Michigan, and made into a farm colony.

The outstanding advances in psychiatry, just prior to the twentieth century, as summed up by Sadler, are: The organization of psychopathic hospitals, (a) those connected with a university, (b) those connected with a general hospital, and (c) those which operate independently.

Psychiatric Treatment in General Hospitals

One of the first psychopathic wards established for a general hospital was at Mosher Memorial Hospital, Albany, N. Y. Many outstanding psychopathic hospitals have been developed around university medical centers. Private hospitals are still lagging in developing much needed adequate psychiatric departments. The private sanitarium is still looked to in most communities to care for patients not sent to state hospitals.

An outstanding development in psychiatry began in 1908 when the book "A Mind That Found Itself," written by Clifford Beers, started a new era of reform in the treatment of the mentally ill and resulted in the founding of "The National Committee of Mental Hygiene." The continuous educational program from this source has increased profes-

sional and lay understanding of the preventive treatment of mental disorders, helped combat the stigma of mental illness and made other well known contributions, thus elevating psychiatric medicine to a scientific level.

Adolf Meyer's influence, especially since 1910, at Johns Hopkins has stimulated psychiatric research. His theory of psychobiologic approach brought about a new era in psychiatric nursing. The complete study of the individual as a whole presents a challenge to every sincere psychiatric doctor and nurse.

The need for nurses with adequate psychiatric training is desperate today. Those of us who have been personally connected with some of the state hospitals within the last five years, where patients receive such custodial care as untrained, unsympathetic attendants are capable of giving, have come to full realization of the abominable situation that still exists.

About all the state hospitals can care for is the large group of chronic or incurable cases. Unable to get trained psychiatric nurses, the hospitals must intrust the care of these patients to attendants who are chosen for size rather than for any other outstanding qualities, and who usually remain on the ward year after year, finally becoming known as "bughousers". In many instances, husband and wife have continued working as such most of their lives. Some of these individuals display kindliness and even some affection toward their charges, but to the average worker, the patient is just "part of his job." Such an attitude is not to the discredit of the attendant. Far from it. He does what is expected of him. He keeps order among his charges—no small task and in many instances at great danger to himself. The hours are long, often 12 to 14 hours a day, with perhaps one day off a week, and extremely small pay. Too often his living quarters are in the same ward with the patients, and his nights are disturbed by moans, curses and screams of the sick.

Usually, only two attendants, rarely more than three, are permitted in a ward of 50 or more patients. With such limited help, all forms of restraint are still permitted and applied on the slightest provocation. Leather anklets, cuffs and belts are still popular. The strait jacket is still being used in many hospitals to curb over activity. Up to 25 years ago, steel cages were still used in some state hospitals. When these were removed attendants and nurses threatened to quit. The combative patient is still quieted by a wet towel, deftly applied to his throat from behind. Manic patients are still brought under control by large doses of cathartics and a starvation diet. Sedatives or chemical restraint, left to the discretion of the night attendant, in some institutions, may be doled out liberally, thus insuring "all" a good night's rest.

Only recently have state hospitals made a sincere and, in many instances, successful effort to provide greater protection and intelligent care for their patients. Trained attendants are few, and schools for their training even fewer. Today we know of one state hospital in particular where recent reforms have provided for more nurses and for younger and better trained attendants. In this hospital the nurses are each assigned to a small group of attendants, whom they closely supervise and instruct in the care of their patients. This hospital is attempting to treat the patient as an individual rather than as a part of the group.

We have seen during the past that acute mental cases with prompt and proper treatment tend to recover rather rapidly, yet all too often such treatment is not available. The majority of mental patients cannot afford a private sanitarium. When a patient realizes the need of mental treatment, he dreads the state hospital, partly because in many states in order to gain admittance he must be committed as insane, and partly because of fears based on the stories he has heard about the treatment of patients. Also, realizing that confinement in a state hospital will mean the loss of his position in business, he struggles along in a vain attempt to manage his problem himself.

Frequently, his family is reluctant to have him enter any psychiatric hospital because of certain misconceptions still prevailing today. Most common among these are: (1) That patients are stupid, weak-minded, and insensitive to the happenings of their environment. This is not true. People of superior ability may have mental disease. (2) That mental disease is incurable. Today recovery rates compare favorably with those for infectious, metabolic or degenerative disease.

(3) That mental patients are suffering from a strange and hopeless disease that affects the intellect and causes asocial and antisocial behavior. True, there *are* mental patients whose intellect *is* deteriorated and there *are* patients with noisy and uncontrollable behavior, but such is not the rule. Judging all mental patients by these few would be like judging all medical patients by the occasional delirious one. (4) That insanity is a disease. There is no such term in medical usage. Insanity is a legal term, and, according to the law, it includes any type or degree of mental illness that prevents the individual from being mentally competent or from conforming to convention. An individual may be perfectly able to transact business, so that according to law he is sane, and yet have such disorders as compulsive behavior or delusions. As far as we are concerned, that patient is mentally ill because he is not making adequate personal emotional adjustment.

To the nurse and the doctor, mental illness is simply a patient's reaction to a problem which he is unable to solve; or a means of escape from a situation that has become intolerable. So today we discourage the use of the terms *insane* or *insanity,* as tending to create a wrong impression and we resent any thoughtless, cruel reference such as "nuts," "lunatics," etc.

The patient whose community provides a general hospital with a department for nervous and mental patients is indeed fortunate. Obtaining a leave of absence, he can enter the hospital in the same manner and on the same basis as any other patient. Usually familiar with some member of the organization, he has a feeling of confidence that he would not have felt in a totally strange hospital. After his hospitalization, he returns to work with new hope and confidence.

The crying need throughout the country is to provide such care for early potential mental conditions. General hospitals will have to fill this need. For years they have provided adequately for the physical care of the sick, but have made no provision for the care of nervous illness. Every general hospital harbors knowingly or unknowingly mental cases, and if knowingly, it is at a loss as to how to treat the patient. One of the most neglected groups are the psychoneurotics, who are badly misunderstood and usually mishandled until they become irritable, dissatisfied and blame doctors and nurses. Under competent, sympathetic psychiatric management this group can be scientifically cared for and the majority cured.

Uninformed nurses and doctors still permeated with the false conception that the mentally sick person must be some wild, unkempt, vicious individual, offer various objections to the installation of a psychiatric unit within the general hospital. They insist that it will be disturbing to the patients on other floors. Invariably they are surprised to find that some of the most delightful and intelligent patients are to be found in the psychiatric unit. Air conditioned, sound proof seclusion quarters accommodate the occasionally uncontrollable patient and prevent any disturbance to other patients.

With the advent of shock therapy methods the need of such quarters has been considerably lessened and these rooms have been utilized for treatment purposes.

It is difficult for the average doctor and nurse to realize that proper psychiatric nursing today does not consist of simple custodial care, but requires the greatest skill and the best of treatment facilities. Such specialized procedures as fever, narcosis and shock therapy are making increasing demands for accurate diagnostic aids and treatment controls such as x-ray, electrocardiograph and pathologic laboratories, and the general hospital is best equipped to meet this need.

Still another objection offered is that the psychiatric department must necessarily present a financial loss. Such is not the case. In no other department does the census remain as constant throughout the year, and it has been our experience that when the rest of the hospital is running low, the psychiatric census remains unchanged, providing a steady income each month. Hospitalization of these patients must necessarily be long and relatives undergo untold hardships to provide for it. The general hospital serves as an intermediary for the average patient between the private sanitarium which he cannot afford and the state hospital that he dreads. Most private sanitaria offer as their lowest rates double the amount that the general hospital is able to quote.

That it will be hard to get nurses to work in the psychiatric department, is still another objection usually presented. It is the rare student nurse who dislikes the psychiatric ward. In pratically every instance she enjoys every moment of it, though she enters with a feeling of fear and uncertainty. As she becomes educated she learns that the patient's behavior is simply his reaction to some personal maladjustment, and the reason for his abnormal behavior becomes clear.

After her work in the psychiatric department the student nurse does better nursing in other departments. She has learned that all patients are mentally ill to some degree, and she is capable of assisting the cranky or neurotic patient. She understands them, and has learned to meet these abnormal reactions without self-wear and tear and without friction to the patient.

There is no doubt that future requirements to be met by accredited metropolitan hospitals will include an adequate psychiatric ward. Some states at the present time require at least three months of psychiatric training before a nurse can be registered. Student nurses in many instances are receiving instruction in psychiatry without opportunity for practical experience. In practically every other instance, such as in the study of pediatrics, such experience is required even if the training school must affiliate to provide for it.

Scientific advancements in psychiatric treatment and increasing satisfactory results in treating the mentally ill in a general hospital force the nursing profession of tomorrow to become psychiatrically minded. The day is past when a nurse can be satisfied in caring for the physical needs alone. She must consider the individual personality make-up of her patient and render nursing service that includes nursing management of emotional reactions, understanding behavior oddities and help rebuild lost self-confidence with full social recovery of the patient.

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Enuresis*

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The word "enuresis" comes from the Greek, meaning to void urine. In modern medicine it has been taken as meaning to void urine, as though unconscious of the act. A more specific meaning is to void urine during sleep, namely, to wet the bed.

Under any and all circumstances, this is an over-simplified statement. Urinating, like any of the vital activities, though starting as a reflex act, becomes endowed with many meanings as the days, weeks and months go by.

In the new born, the act proceeds something like this. As the urine gradually accumulates, the muscle wall of the bladder rounds

* As the quadriceps femoris contracts with the knee jerk response to the tap on the patellar tendon.

out and finally begins to stretch. After tolerating a certain amount of such stretching, this muscle wall responds with a slight muscular contraction.* The balance between strength of sphincter and pressure from bladder contents is upset and a small amount of urine passes the sphincter and enters the posterior urethra. The sensations from the posterior urethra added to those of the distended muscle or bladder wall stimulate the motor element of the reflex arc and as long as there is urine in the urethra, this expulsive effort continues, concluded by sharp contractions of the perineal muscles—muscles that later, in the male, become part of the mechanism of orgasm. So far this procedure is a matter of mucus membranes and muscles, of peripheral nerves and cells in the lumbar and sacral spinal cord. Something on the pattern sketched above seems to occur in the act of urination of the adult whose spinal cord has been severed from the brain, and where the thinking process has little if anything to do with the act.

However, enuresis, or voiding of urine, does not remain a purely spinal affair very long. No one can tell just when an infant begins to pay attention to its excretory procedures. But sudden interruptions of cries, of playing with fingers or toys; changes of expression, and the like; such acts denoting attention seem to indicate that an infant of but a few weeks of age has begun to notice that something of importance is occurring. From then on, the act of urination goes on acquiring collateral associations that change quite rapidly throughout childhood, remain much the same throughout middle age and again take on new significance and meanings in old age. *When* such conscious attention *begins*, and *what* the nature of its contents is, what associations are formed, no one can know for certain.

Is it just one thing? That seems highly improbable when one takes into account the variety of situations in which the act of urination may occur.

The idea of something specific, attractive here, as in all fields of medicine, can easily lead one's thoughts astray. "It's inherited. His father's brother wet his bed till he was twelve." "He plays too hard." "Too much water after supper," etc., etc. The child hears such reasons voiced by adults, accepts them as its alibis and is well launched on the sea of distrust, where much of the thinking of childhood adventures and gets lost; gets lost because false premises discredit logical thinking and children may know truth that is missed by preoccupied adults. Such specificity as, "because he sleeps so sound," satisfies. A person asleep is not supposed to know what goes on. More careful thinking seems to show that ignorance here, as in many other places, can be assumed and made to look like innocence.

Primarily, as is said above, the act is reflex. It is something belonging entirely to the body. As such, it has the importance of something entirely one's own. "I'll do it when *I* want to, not when someone else wants me to." Perhaps that is what instinct is: the functioning of some part of the body in the manner that is of service to the individual. This is something an infant can do, of and for itself. This endows the act with a measure of importance (to the infant) that the attendant adults usually fail to consider. It is something the child can control and no one else can.

The matter is like this. The human nervous system is made up of a number of different levels. To the basilar ganglia of the brain comes the knowledge of the body and its state of being and at this level the more complex reflexes are arranged. Above this level is the cortex. Each level acts somewhat in control of the levels below. It is natural for the type of process that goes on at the cortical level to attempt to take over control of processes occurring at lower levels. As an infant becomes conscious of urinating, there grows a tendency to take over control of the act and to do it as the fancy of the moment dictates.

What is the fancy of the moment?

That question cannot be answered adequately any more than one can know just what one will think at any moment in the future. Even the basic fact of urine causing pressure is not a constant. A girl of eleven could wet the bed every half hour—just a little at a time—but would fail to pass any urine in three trips to the toilet during the night. Obviously, it was not the amount in the bladder that caused the voiding.

Fingering of the genitals can cause voiding in the young (also at any age). Many a child will handle itself as it sleeps. This causes an

increase of sensation coming from this region (the stimulant to the reflex) similar to that caused by the passing of the drop of urine through the sphincter into the posterior urethra. Perhaps there is always an idea behind such fingering. But sometimes it seems as though the arms and hands were of such a length and of such a position as to lead to their meeting at the genitals as a matter of efficiency of structure. It is just natural that they should.

This is on the physical side. Of course there are many physical anomalies of the urinary apparatus, anything from unusual implantation of ureters and an enlarged trigonum to hyospadias or an adherent or small opened prepuce. Then too, there are adenoids, hernia and club feet and operation on any of these may be followed by "cure". But that's merely misleading and often means an increase in the emotional factors already pathogenic in their degree.

Fingering of genitals is part of the play of love. Urination may occur as a favor to a doting mother or nurse. Two children, male and female, pee together, up to five, as their way of showing their feelings for each other.

Love? Perhaps the memory of mother's caress, of her breast, of her handling of the genitals in washing and wiping. To be an infant is to be taken care of, to be loved. To urinate at the first suggestion of pressure on the sphincter is infantile. To wet oneself is to invite mother's attention and cleansing care.

Fear? The desire to urinate is well known in fear. There is no need to do more than make the statement merely as a reminder. Fear and anger are closely related as are anger and contempt. "To piss on" something is a sign of contempt. What are the things apt to cause these emotions in the young?

Anything new, anything strange, any reproof or criticism can start the snowball down the hill and as it goes on, it picks up anything and everything in its path. Anything in childhood may awake resentment. Once resentment is aroused anything may acquire the appearance of threat. The act of wetting the bed is wrong and so from the start that which is natural is wrong. If adults tell a child it is bad, they may arouse anger more than they teach self-control. If they hang a threat over the bed, resentment may poison, instead of fear making good. And when there's resentment, there's little desire to learn (to please), or to see things as they are meant.

A boy's congenitally deformed feet were operated upon at one year of age, again at eight. He was "cured" of enuresis by an operation on his bladder at six. At fourteen when I first saw him, he told me "everything" was tried on him and when he spoke of his mother, he showed great resentment: she had told him he was just going to a clinic and he landed in the Operation Room for a tonsillectomy. After he had gotten over some of his fear of me he told me his mother had "punished" him by restricting fluids after 4:00 p. m. He couldn't see such restriction as other than punishment.

These are generalities. It's dangerous to try to be specific. The castration fear has been blamed. But a boy, twelve years old, who had never had a dry bed told of his great castration fear as though he knew his genitals should be punished because they had always been bad. The mutilation fear seemed more a result than a cause. Another boy definitely threatened with castration by a drunken stepfather had no trouble with enuresis.

Terrifying dreams are blamed. Children having much sleep disturbance, telling of terrifying dreams, but not urinating, are matched by those who do urinate when the ghost or the kidnapper comes into the room. Fear may wet the bed, but not just fear alone. In short, children may continue to void reflexly for a variety of reasons, any or all of which may act at one time or another.

In my experience, one factor has been consistent in the genetic picture of enuresis, a factor that can be thought of as a consciously adopted alibi, or as a refusal to progress. It is the refusal to accept responsibility. Responsibility is something that comes with growth. We start it with our first breath, movement, our first efforts of any and all kinds. Hence when it is denied in this situation, when the child answers the question, "why do you wet your bed?" with "I don't know," and then answers the question, "why don't you know?" with "I'm asleep," one must conclude that it is saying what it wants the adult to hear and *nothing more.*

Can it be made to give up such an attitude? Most children can. And when they do, it is a step towards adulthood of more than a little

importance.

How is such a change of attitude to be brought about?

Here again no single thing is specific.

Many children will take over control when the need is put up to them.

The fact that the first advance is most frequently made when the child is put to bed without diapers is a suggestion too obvious to ignore.

Of course no child is going to take on responsibility gladly if a terrible fuss is made over an occasional, or even frequent, failure. Such fuss, whipping or other punishment, may set up a non-conformist attitude all too easy for children to adopt. And though a whipping may settle the matter with one child, it may merely prolong the battle with another, or may be followed with apparent acquiescence only to have some other nonconformist or antagonistic attitude develop out of the fear, anger or hatred set up by the punishment.

In enuresis, as in any behavior disorder, the way the matter is put up to the child is of major importance. In general, one might say that during the first four years, the doctor should work through the parents. He is apt to find that there are other matters on which parent (mother) and child are battling. It has often happened that settling a feeding problem by getting mother to let her child eat as it pleased of what was set before it, also settled the wetting problem. Or a too rigid attitude towards the hours of naps, in the fixed belief that a habit *must* be formed, may be relaxed and then the sphincter won't have to relax. Or if mother can spend a little more time and affection on a child that for some reason (good to the child) thinks it is neglected, results may follow. Anything that works towards the attitude, "this is something I want," rather than, "this is something I must," works *towards* such an attitude, but doesn't command or demand it, because after all a two or three year old mind may resent the demand, but be pleased by the fact that it is moving towards control on its own.

After four and before too, in some cases, if a doctor can get some of the confidence of a child, can get past the fact that the child sees in him one who is trying to find out what's the matter with the misbehaver, the naughty child, then that doctor can put the matter in such a way as to be acceptable to that child. The "naughty child"—the child knows he's naughty if no one else does, no matter how much effort is made to lead it to think that it is sick, or that it has kidney trouble, or that it sleeps too soundly, or "mother mustn't let you drink so much, it's mother's fault," or any of the other reasons apt to be paraded before the child at one time or another. On the other hand, children are acquiring knowledge and control of their bodies so constantly that they can accept the idea that they can know when the impulse comes and can shut it off without having to wake up. They can accept such an idea, if it is put to them with confidence, without question and without reproof. But they will accept it or not as they see fit. If they have built up their defenses against the variety of attacks, as is usual from five years on, then subterfuges *may* have to be indulged in to keep the bed dry. However, some effort should first be made by the adult to get across the idea that such knowledge of oneself is possible and desirable. Many adults get up to urinate once or twice a night just because they didn't acquire such knowledge in their childhood.

After such knowledge has been put before the child and still it goes on, then help can be offered. It may be of any sort. It is unfortunate when the help is thought of as of more importance than the knowledge. This is true of all so-called cures. A five grain tablet of sodium bicarbonate may do the trick. An electric device that gives a shock, an alarm clock, salt, and even a sedative may have the same result. However, all these things are excuses for quitting rather than reasons. A boy of twelve to whom the thought of responsibility failed to appeal had his first dry nights, two weeks of them, when he took the tablet prescribed at bed time, but as his mother was happily telling the good news, broke in with anger, saying, "Yes, that medicine wakes me up every night at two o'clock and I have to get up and go to the toilet." The tablet was luminal.

There is a demand for cure, cure along the traditional lines of medical science, some drug, operation, diet or other specific. The demand comes from the medical world as well as from the general public. Specificity

appeals here as it does in the etiology. We want something specific. This is a behavior disturbance, not a disease and the only specific is knowledge and control of impulse. Both generalities, knowledge and controlled impulse, are the opposite of our ordinary idea of specifics; but both are the natural acquisitions of the growing child. When they are not acquired, then the reason for such ignorance and perversion must be understood.

No doctor has the right to ignore in his own thinking the role played by resentment in this type of behavior. If the doctor does ignore it, he will of course fail to put the responsibility up to the child. As is so often the case in the practice of medicine, the doctor takes the responsibility instead of the patient, and this is one place where such an assumption of responsibility might be looked upon with horror by a more enlightened civilization.

Such switching of responsibility is accepted by us because we can think of enuresis as a disease, and a disease is something only the doctor knows about. It is therefore proper that he should say what is wrong and how it should be righted. He will then prescribe his specific. It may work even though there is no sense to it. But the child has failed to profit from the feeling it has done something for itself. If the specific fails, then there are other things to try. Any one of these trials may coincide with a change in attitude of the patient and so *seem* to work the cure and then another belief in the influence of outside forces is built up in the child's mind and one of the foundation stones of the building of the self-confident personality has been left out. In the attendant adults' minds the child has been sick. Something has been the matter with his bladder, kidneys, etc. A false picture all around.

8 South Michigan Boulevard.

Multiple Sclerosis

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Introduction

One of the searching problems in medicine today is the cause and treatment of multiple or disseminated sclerosis. That it is not a small problem can be seen when one realizes that multiple sclerosis ranks third in frequency among neurological disorders in America and second only to syphilis in England.[1-2] Putnam,[2] by comparing multiple sclerosis with other well known diseases, vividly portrays its frequency. In the Boston City Hospital from 1931 to 1935, he found the diagnosis of subacute bacterial endocarditis in 50 cases, of poliomyelitis in 101 cases and of multiple sclerosis in 203 cases. This led him to comment, "Yet the natural history of poliomyelitis is familiar even to the laity, and enormous sums are expended on its study, while even among medical men multiple sclerosis is often referred to as a 'rare and mysterious' disease, which deserves no more than passing interest."

The recognition of multiple sclerosis is not always easy. It frequently results in a confusing picture, which makes an early diagnosis difficult. As Wechsler[3] has stated, "It is said to be a classic disease, a typical disease. The only classic or typical feature about multiple sclerosis is that it is never typical or classic and that in all cases the manifestations are atypical." However, there are certain characteristic symptoms and findings which should suggest multiple sclerosis.

It is the purpose of this paper to present some short illustrative case studies as well as to review the more common symptoms and findings of the disease.

The Nature of Multiple Sclerosis

The outstanding features of multiple sclerosis are: (1) it occurs predominently in young

people, rarely after forty;[1] (2) it usually produces symptoms which cannot be explained by a single lesion; (3) the symptoms and findings come and go, get better and worse, sometimes with remissions of months or years; (4) it may imitate almost any disease; (5) the onset may be insidious and slowly progressive or sudden and grossly destructive; (6) there may be symptoms referable to the peripheral nerves;[4] (7) subjective symptoms may be far greater than any corroborative findings.

Pathologically, the findings are quite constant. There are scattered, patchy areas of degeneration in the white matter of the central nervous system. The axis cylinders are usually preserved until late in the disease.

The cause of the disease is not known although recent investigation indicates that venous obstruction is the cause of the degenerative placques, with some primary abnormality in the clotting mechanism of the blood as an underlying factor.[5] The symptoms seem to come and go regardless of treatment. Nevertheless, the patient should be treated symptomatically. If the physician turns the patient away as hopeless, the cultist, who is often consulted next, will be given credit for the improvement or remission which occurs in the natural course of the disease. It should be emphasized that these spontaneous remissions are often complete and that they may last for years without a return of symptoms.

The More Common Characteristics

Eye Symptoms—Symptoms referable to the eyes occur in almost every patient with multiple sclerosis at sometime during the disease process. Such symptoms may play an outstanding part in the symptomatology, but do not always do so. There may be variations from slight fuzziness or dimness of vision to sudden and complete blindness; from transient diplopia to a definite strabismus with diplopia in all fields of vision. Whenever the diagnosis of multiple sclerosis is considered, the patient should be carefully questioned about present or past visual disturbances. It may have been the initial symptom, but having been transient, it may have been forgotten. Nystagmus is another frequent finding and is usually of a horizontal type, but may be vertical. Objective findings in the optic discs such as temporal pallor, optic atrophy or a retro-bulbar neuritis are often noted (see case 4). Sometimes the temporal pallor is too slight to be recognized as pathological, but it is quite noticeable if the involvement of the optic nerve is extensive. There may be pupillary abnormalities such as inequality, irregularity and, rarely, an Argyll-Robertson type of pupil, but the pupils may be entirely normal.

Motor Symptoms—Symptoms referable to the motor tracts are variable. They may be entirely absent, but gross symptoms such as paraplegia, hemiplegia, or spasticity do occur. The only indications that the motor tracts have been or are being involved may be absent superficial reflexes such as the abdominals or cremasterics, increased deep reflexes, or pathological toe signs, such as the Babinski and its confirmatories. There may be muscular atrophy,[6] although this is unusual. If there is atrophy it means that the anterior horns have been involved. Motor signs in the cranial nerves other than those involving the eyes (which have been discussed under eye symptoms) are not uncommon. Occasionally the bulbar centers are involved with resultant impairment in speaking and swallowing. Most of all it is important to remember that the disease process may involve any part of the nervous system and that almost any motor impairment is possible.

Tremor—Charcot described a triad of symptoms which includes nystagmus, scanning speech and tremor. This triad is considered pathognomonic of multiple sclerosis. However, if one waits for all three or any two of these symptoms to appear, the early diagnosis will often be missed. Nevertheless, the syndrome does appear in part in many cases, often quite early in the disease. Tremor is probably due to pathological processes within the cerebellum or its tracts. The tremor is of an intention type, or a tremor on movement and is not present at rest. There may be an associated hypotonia. The combination of the tremor and hypotonia gives a loose, ataxic type of movement to the extremities whenever any act is carried out, such as walking, writing or putting anything to the mouth. The head is also involved, resulting in a to and fro oscillation when the patient is walking or sitting. There is a wide base on walking. The characteristic attitude is that of

one who has lost control in carrying out well coordinated movements.

Sensation—Compatible with the atypical nature of multiple sclerosis, sensory manifestitations may be variable and confusing. Frequently, the sensory changes are largely subjective thus giving rise to the question of hysteria.[7] The complaint of paresthesias such as numbness, tingling, or feelings as if a limb were asleep, are common. The paresthesias are variable and changeable from time to time. They may involve a hand, the fingers, the toes of one foot, a leg or even the entire body. Actual pain can occur. It may take on a muscular or an arthritic character.[7] The pain may be of such a character that a question of a surgical condition in the viscera may arise, as it probably did in one of our cases (see case 4). Brickner[7] stated that, "Recognition of the occurrence of pain of arthritic and muscular nature is important, because a history of severe pain is sometimes considered prejudicial to the diagnosis of multiple sclerosis due to the rarity of root involvement."

Objective findings indicating implication of the posterior funiculi are the most common, such as the impairment or loss of vibratory perception, impairment of the position sense and a positive Romberg.[7] The findings may be in an upper extremity instead of a lower limb, depending on the portion of the cord involved. Involvement of the pain and temperature tracts is less common. In Brickner's[7] series, 38.7 per cent showed involvement of these particular tracts while 95 per cent had findings referable to the posterior funiculi. Astereognosis is not an infrequent finding (see case 1).

Bladder and Bowel Symptoms—Symptoms such as urgency, frequency or a temporary or prolonged lack of control of the bladder or bowel indicate lesions within the sacral part of the cord. In males, impotency is often a complaint of more concern to the patient than any of the other symptoms.

Mental and Emotional Symptoms—Emotional changes in multiple sclerosis are often observed. Cottrell and Wilson[8] in a report of 100 cases say that emotional changes are frequent. They classify the emotional changes as a state of euphoria or a feeling of mental well being, eutonia or a feeling of physical well being, and spes sclerotica or an optimism for the future not warranted by the physical condition. They say further, "These affective symptoms are characteristic of the disease, are primary or a direct result of the disease-processes, and are completely independent of duration, degree or clinical type. In a fair number of instances they precede the appearance of any somatic neurological symptom—subjective or objective." This triad of emotional changes constitutes, in their opinion, a syndrome more reliable and of more diagnostic significance than any neurological symptom-complex. Intellectual changes in contrast to emotional changes are not frequent.

Case Studies

Number 1

Mr. W. G. M., age 33, Insurance adjustor.

Dec. 14, 1937: He complained of: (1) a burning sensation and a feeling of numbness in the right foot and right leg of three months duration; (2) a sensation as if they were asleep, only more unpleasant; (3) peculiar sensations in the right arm of 2½ weeks duration; and (4) burning in the ends of the fingers and a sensation as if they were going to sleep. There was no trouble in writing and diplopia had not been noted. The findings were a wide base on walking, a tendency to fall to the right, impairment in skilled acts in the right hand, ataxia on coordinating tests, increased deep reflexes in the right leg, no objective sensory loss, dysesthesia on pin prick on the right side of the body, slight horizontal nystagmus and an euphoric attitude with spes sclerotica.

Dec. 20, 1937: Paresthesias had disappeared in the right leg to a great extent, but had increased in the right arm. There were astereognosis and loss of ability to carry out skilled acts in the right hand. Ataxia was marked in the right upper extremity.

Feb. 17, 1938: At this date there were double vision, tingling and numbness in the right hand, astereognosis in the right hand, horizontal nystagmus, and diminished vibratory perception in the right arm.

March 1, 1938: The only changes were tingling in fingers of left hand, diplopia less marked, definite bitemporal pallor of the optic discs, and normal sensation objectively throughout.

Number II

Mr. W. P. L., age 29, laborer.

Dec. 17, 1937: He complained of: (1) numbness in the lower abdominal region and in the feet and legs of three weeks duration; (2) extension of the numbness to the right side of the face and the tongue with impaired gustatory sense; (3) dizziness of three days' duration; (4) dysphagia; (5) the bottoms of the feet felt as if walking on rope; (6) three years ago double vision had been noted as well as tingling and numbness in the right leg and foot; (7) a year ago dizziness had been present; and (8) of late the right pupil had been larger than the left. On examination, there were a wide base and ataxia on walking, ataxia on coordinating tests, horizontal nystagmus, impairment of vibratory perception to the hips, and a right central facial weakness.

April 26, 1938: Improvement was noted, but of late symptoms had recurred, such as weakness in the legs, blurring of vision, numbness in the right side of the face, difficulty in walking in the dark, and transient double vision. The findings were horizontal nystagmus, increased deep reflexes in the lower extremities, bilateral Babinski signs, ataxia and a positive Romberg, impaired vibratory perception in the lower limbs, and a marked jocosity and euphoria not in keeping with his actual condition.

October 28, 1938: At this time, he was walking with a cane; he was unsteady; he had been completely paralyzed in the legs; numbness had extended to the waist line; there had been incontinence for three weeks; vision was blurred; emotionally there was a marked change; he was extremely euphoric and he laughed compulsively. His attitude was one of unconcern. The findings were much the same as on the previous date.

Number III

Mr. C. L., age 19, High School boy.

Jan. 23, 1939: He complained of numbness in the toes of the right foot with progression to the knee of 1½ weeks duration and of a feeling as if the toes were over-riding. *In June, 1938,* numbness and weakness had been noted in both hands after using a pitch fork. *In Dec., 1938,* numbness was present in toes of the left foot and there was a tight feeling in the knee of the left leg.

Jan. 30, 1939: The symptoms were much the same except that there was numbness of the right buttock, which made him feel as if he were sitting on a lump. His mother had to tie his ties because his fingers felt like thumbs. Both knees felt tight and as if they were swollen. The findings were normal sensation objectively, slight swaying on the Romberg, unequal deep reflexes, bilateral positive Babinski, Chaddock, and Rossolimo signs, but more marked on the left. There was no clonus or muscular weakness.

Number IV

Miss L. N., age 26, College student.

Feb. 17, 1936: At this date the patient was first seen. A few weeks prior to this date her right eye turned in suddenly and diplopia was present on looking to the right. Dizziness was present to a moderate degree; there was no nausea or vomiting. Objectively, there was only the right internal squint.

April 7, 1937: The symptoms this time were double vision on looking to the left, of two weeks duration, and blurred vision. Neuritic pains—fleeting, paroxysmal and multiple—had been noted during the past two years in the shoulder, chest, sternum, elbow and wrist joints. The findings were blurring of the left disc margin—a retro-bulbar neuritis—slight left external rectus weakness, and a gross tremor of the left arm when extended.

June, 1937 to Sept., 1937: There were attacks of numbness in the hands, occasional difficulty in reading, aching in the hips, joints and sternum, numbness in the left side of the face, and some fatigue. The findings were limited to bilateral Hoffmann signs and increased deep reflexes.

December, 1938: In the interim between the last date and the present one she had been to college. While at college distress developed in the right side extending to the mid-line. The distress was an aching soreness. There was little associated tenderness. Her trouble was thought to be appendicitis and an appendectomy was performed, which revealed quite a normal appendix. Very likely the distress was due to sensory manifestations of multiple sclerosis. The objective findings at this date were increased deep reflexes,

throughout, tremor in the left hand and arm, hypotonic posture of left hand, and bilateral Hoffmann signs.

March 1, 1939: Blurring of vision with almost complete loss of sight in one eye had been added to the clinical picture.

Number V

Mrs. D. H., age 34, School teacher.

Sept. 26, 1936: At this date, the patient was first seen. Six years previous, following her husband's death, there was a so-called nervous breakdown, which was characterized by double vision and a "little crooked walk." She was told she had paralysis of the eye muscles. In the spring previous to this date there were numbness in the right hand, right side of the face and impaired taste perception on the right half of tongue. Of late a peculiar itching sensation developed in the right knee and foot. The findings were moderately increased deep reflexes, absent lower abdominal reflexes, slight impairment of tactile and pain perception over the right side of the face.

Oct. 18, 1938: She felt a little "jittery". Her eyes seemed unsteady and blurry. The feet felt numb and the left arm and hand felt numb and cold. The findings were an euphoric, cheerful attitude, horizontal and vertigal nystagmus, positive Babinski sign on the right, unsteady gait, positive Romberg and ataxia on coordinating tests.

Feb. 1, 1939: Patient appeared well; however she complained of feeling tired, of her leg muscles drawing, and of blurring of vision. She said, "I really don't think they do but just feel that way (laughing happily). I'm more apt to be dizzy but not quite sure. That's all. Sounds simple." This impressed the examiner as an eutonic attitude. The findings were euphoria, spes sclerotica, emotional lability characterized by alternating laughing and crying, horizontal nystagmus, active deep reflexes, impaired vibratory sensation in the right leg, positive Romberg and an hypotonic posture of the left hand.

Summary

Multiple sclerosis is a diffuse, degenerative process involving primarily the central nervous system. Its cause is not known and no effective treatment has as yet been established. It attacks individuals in the fore part of life, frequently in the second and third decade. It rarely starts after the age of forty. The findings may be variable and conflicting. Subjective symptoms may predominate over any objective findings. Remissions of variable lengths are the rule. Symptomatic treatment is indicated in order to maintain the patient's hope and morale, for without these he falls an easy prey to quacks and cultists.

150 East Broad Street.

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Results in the First 500 Functional Cases Treated with Insulin Therapy and its Modification, at the New Jersey State Hospital, Trenton

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This series of five hundred cases began March 30, 1937 and extends to November 15, 1939. Treatment was begun on a group of eight patients which was, within a year, increased to seventy-eight. At the present time, we have facilities for handling this number of patients. Patients are treated in groups of sixteen, in small dormitories. These are kept darkened during the treatment period and each group is a self-contained unit with emergency equipment always available. Dressing carts containing ampules of 50 per cent glucose, adrenalin, coromine and caffeine, with the necessary equipment for their administration, are kept in each section. A separate tube is kept for each patient and trays are always ready for the administration of hyperdermoclysis, or large amounts of solution intravenously. An oxygen tent is always available for instant use, as well as several small inhalation tanks. The medical supervision consists of the writer and an assistant. Nursing supervision consists of a supervisor and twelve nurses, aided by ten attendants.

A separate diet kitchen is maintained and the dietary demands of the treatment carefully adhered to. Treatment being completed by noon, weather permitting, patients are taken outdoors for recreation in the afternoon. In the winter they are sent to occupational therapy classes. If the patients improve sufficiently to warrant release, they are sent home directly from the Insulin Ward. We think this has an excellent psychological effect on the patients remaining on the ward, in that it gives them a more hopeful outlook.

Psychological studies are being made in order to add, if possible, to the information upon which selection of patients with a more favorable prognosis can be made.

Basic Technique

Treatment is begun with 20-30 units of insulin and a daily increase of 20 units is made, until the desired shock is obtained. Treatment is given every day except Wednesday and Sunday. The injection is given early in the morning and the hypoglycemia terminated four hours after injection unless cardiac, respiratory symptoms or a convulsion intervene. Any of these conditions is indication for immediate termination. Termination is effected by a 40 per cent solution of sucrose, karo or glucose, sufficient quantity being given so that the patient receives 1 gram of sugar for every unit of insulin.

Sucrose is used in the early stages of the treatment and continued throughout unless the period of termination becomes unduly prolonged. If this occurs, karo is used; in the more difficult cases, glucose is used. Free use is made of 50 per cent glucose in 50 cc. ampules intravenously and of 5 per cent glucose in saline by hyperdermoclysis if the patient does not respond in 15-20 minutes, or in any condition necessitating quick restoration of a normal blood sugar.

The dosage is carried up to 300 units and if sufficient shock is not obtained, an attempt is made to cut the carbohydrate intake and increase the amount of sodium chloride both in the diet and by the administration of sodium chloride tablets.

U-100 insulin is used and, due to its potency, a special syringe was devised and made up by the Becton-Dickinson Co. with wide variations between the marks and with 3 cc. capacity.

Various brands of insulin vary in potency; hence, changes of brand are not made during a course of treatment.

Metrazol is never used alone and is given only when no improvement is noted after the twentieth treatment. It is then given, three hours after the insulin, to a relaxed, stuporous patient and, while it produces a marked convulsion, the danger of fracture is minimized.

A series of eighteen patients were previous-

ly treated with Camphor-Metrazol Therapy without Insulin. Of these, only two showed sufficient remission to be able to leave the hospital. These cases were all schizophrenics of the hebephrenic type. Two severe fractures of the humerus and several dislocations occurred during this treatment and it was discontinued because of its danger and poor results.

If no definite improvement is noted in fifty treatments, we have found it useless to continue. If, however, a definite improvement occurs, but the patient is not sufficiently improved to be released, treatment should be continued.

Physical Contraindication

Tuberculosis is a definite contraindication and we have found that any attempt to give shock doses to a latent tuberculous patient produces an acute exacerbation. Diabetes mellitus, marked cardio-renal or respiratory disease are contraindications, but small doses —110-150 units can be given to mild cardiac cases with comparative safety.

The results of the treatment in the first 500 cases are presented in the following tables:

TABLE I

	Total	*Released*	*Not Released*	*Discontinued*	*Died*	*Returned*	*Return of Release*
Total	500	352	130	8	10	43	14
Schizophrenics	348	226	107	6	9	35	10
Manics	88	76	10	2	0	7	4
Involutionals	42	33	8	0	1	0	0
Psychoneurotics	6	6	0	0	0	0	0
Other Types	16	11	5	0	0	1	0

No significant difference was noted between male and female patients, so no attempt has been made to separate the sexes.

It will be noted that out of five hundred patients, there were ten deaths or a mortality rate of 2 per cent. The highest mortality (six cases) was in catatonics, who had been in a stuporous state and were markedly emaciated as a result of their psychosis. One involutional case died as a result of an acute myocarditis following a persistent hypoglycemia followed by a hyperglycemia. This was the usual cause of death and is the greatest danger of the treatment.

In order to control the rapid changes from hypoglycemia to hyperglycemia, a La Motte blood sugar outfit is used for emergency determination of blood sugar and all nurses are trained in its use. Facilities are also available for testing for glycosuria.

Discontinued Cases

The principal reason for discontinuing treatment prior to completion is the flare-up of a tuberculous process and was the cause of discontinuing treatment in five cases. Two were stopped because of cardiac symptoms and one because of an acute nephritis.

Tables II to VI show the results for each subdivision of the groups reported in Table I.

Of a total of 348 schizophrenics treated, 226 improved sufficiently to leave the hospital. Of these, 35 returned and after further treatment, 10 were again released. The 107 cases who did not improve sufficiently to leave included 40 chronic cases who were placed on insulin as an experiment to test its efficacy in the old deteriorated cases and who had been given a hopeless prognosis. Another 41 of these cases had a duration of over two years. Despite these 81 chronic cases, the percentage of released patients, 64.9 per cent, is far higher than can be expected from any other method of treatment at this time.

The return of 15.4 per cent is not unduly high, and the release of ten of the thirty-five patients who returned lowers the present net return to 11.7 per cent. It is probable that the return rate could be further lowered if suitable work could be found and environmental factors adjusted.

In treating this type of case, we have usually allowed the paranoid and hebephrenic types to go into deep shock and have used

metrazol on the cases that did not show improvement after twenty treatments with insulin.

The simple and catatonic types we have usually terminated in three hours and try to terminate in an excited state, until a definite improvement in the emotional tone was noted. Metrazol is rarely necessary in these types and a short course of treatment usually is sufficient to produce the desired improvement.

TABLE II

Schizophrenia

	Total	*Released*	*Not Released*	*Discontinued*	*Died*	*Returned*	*Release of Return*
Total	348	226	107	6	9	35	10
Simple	34	30	4	0	0	4	2
Catatonic	87	57	20	4	6	2	1
Hebephrenic	118	76	40	1	1	13	3
Paranoid	106	60	43	1	2	16	4
Mixed	3	3	0	0	0	0	0

TABLE III

Manic Depressive Insanity

	Total	*Released*	*Not Released*	*Discontinued*	*Died*	*Returned*	*Release of Return*
Total	88	76	10	2	0	7	1
Manic	43	40	2	1	0	4	0
Depressed	36	30	5	1	0	3	1
Mixed	9	6	3	0	0	0	0

In the manic group, eighty-eight cases were treated, with remission noted in seventy-six. Of the ten who did not improve, nine had a duration of over two years. In this group, we can shorten the hospitalization period by the use of insulin, as well as prevent the occurrence of manic exhaustion. In the manic type, our usual procedure is to put the patient in a deep coma as rapidly as is safely possible, usually by increasing the dose 30 units daily. The patient usually quiets down after the first two or three treatments and the recovery is rapid most of the time. In fact, we have had remission in some cases, with twenty treatments, ten of which are shock treatments.

In the depressed type, a smaller dose, termination in excitement and usually a total treatment period of three hours produce the best results.

The mixed and circular types are treated with modification of the above, as indicated by the patients' changing phases.

It is obvious, in this type of case, that environmental factors play an important part in the etiology and can be expected to produce recurrences unless they can be corrected.

TABLE IV

Involutional Psychosis

	Total	*Released*	*Not Released*	*Discontinued*	*Died*	*Returned*
Total	42	33	8	0	1	0
Depressed	34	26	7	0	1	0
Paranoid	8	7	1	0	0	0

The results in the involutional group, either depressed or paranoid, are exceptionally good. Of the forty-two cases treated, thirty-three were released. In cases of less than one year's duration, a remission was obtained in all cases treated.

Of the eight cases which did not respond to treatment, seven had resided in the hospital for two years or more prior to undergoing treatment. The eighth case had a long duration prior to hospitalization. There have been no returns of involutional cases, some having been out of the hospital two years and apparently are completely recovered.

There are physical factors to consider in this type of case and the usual technique has been to slowly increase the dosage, until 120 to 150 units of insulin are reached and the patient terminated three hours after injection. Metrazol has been used on a few of the more resistant cases with apparently beneficial results.

Lately we have been administering five minims of adrenalin at the time of termination, to lessen the time between termination and full consciousness.

Most of the new cases in this group can be released from the hospital in approximately 14 weeks after admission, including attention to infected teeth or tonsils. It would appear that at this date, this type of treatment is superior to all other forms of therapy for involutional psychosis.

TABLE V

Psychoneurosis

Total	6
Released	0
Not Returned	0
Discharged	0
Died	0
Returned	0

Six psychoneurotics were treated. All were released from the hospital in a markedly improved condition and, at this time, after six months to two years, all but one appear to have recovered and are making a good social and economic adjustment. The increased appetite and subsequent gain in weight have a markedly beneficial effect on this type of patient and we consider that it is good practice to subject the more severe type to shock therapy. It is well to remember that in the young, psychoneurotic symptoms are often prodromal to a definite psychosis and should be considered of grave significance. The psychoneurotics were subjected to the full shock treatment and allowed to go into a deep coma.

TABLE VI

A miscellaneous group of ten patients were treated. These included the following:

	Total	*Release*	*Not Released*	*Discontinued*	*Died*	*Returned*
Total	16	11	5	0	0	1
Psychosis with Mental Deficiency	7	4	3	0	0	1
Alcoholic Hallucinosis	3	3	0	0	0	0
Post Traumatic Constitution	1	1	0	0	0	0
Psychosis with Psychopathic Pers.	3	1	0	0	0	0
Psychosis due to Exogenous Toxins	1	1	0	0	0	0
Unclassified	1	1	0	0	0	0

The cases of psychosis with mental deficiency and with psychopathic personality were in manic-like states and all improved in their hospital adjustment, five of the ten being released as free from psychotic symptoms.

The three cases of alcoholic hallucinosis were treated because of persistence of their hallucinations and all showed rapid recovery. A high vitamin diet was also given these patients.

The other three cases showed a schizoid reaction and were treated because of the predominance and persistence of schizophrenic symptoms. They all improved sufficiently to leave the hospital.

TABLE VII

Duration of Psychosis in Patients Completing Treatment

		Under 1 Year		1 to 2 Years		Over 2 Years	
	Total	Released	Not Released	Released	Not Released	Released	Not Released
Total	482	139	13	51	11	162	106*
Schizophrenia							
Simple	34	9	0	2	1	19	3
Catatonic	77	26	6	8	3	23	11
Hebephrenic	116	24	3	12	3	40	34
Paranoid	103	15	2	14	4	31	37
Mixed	3	2	0	0	0	1	0
Manic Depressive							
Manic	42	26	0	0	0	14	2
Depressed	35	10	1	9	0	11	4
Mixed	9	3	0	2	0	1	3
Involutional Psychosis							
Depressed	33	16	1	0	0	10	6
Paranoid	8	3	0	2	0	2	1
Psychoneurosis	6	0	0	0	0	6	0
Other Types	16	5	0	2	0	4	5

* Includes a group of forty chronic cases selected because of their very poor prognosis, in an effort to observe the effect of this therapy on apparently hopeless cases.

Time Out of The Hospital of Released Patients

The following table shows the time out of the hospital of the 323 patients now at home:

Over 2 years	68
1 to 2 years	43
6 mos. to 1 year	178
Under 6 months	34

Sequela

Only two after-effects of any significance are noted. The first, is a marked increase in weight which causes considerable complaint among the female patients. Measurements of patients before and after treatment have shown this to be a general distribution of fat and not a localized one. It readily responds to appropriate diet and exercise.

The second, is a marked parasthesia in the hands and was found in twenty cases. This responded to a high vitamin diet in from two to six months.

Conclusion

We think the following conclusions are justified from the above data:

1. A higher percentage of functional cases improve sufficiently to leave the hospital and in a shorter period of time than by other methods of treatment. Percentage of patients now out of the hospital of those having completed treatment are as follows:
   - Schizophrenia 64.9%
   - Manic Depressive Psychosis 83.3%
   - Involutional Psychosis 80.5%
   - Psychoneurosis 100 %
   - Other Types 68.7%
2. The treatment, in experienced hands, is not unduly dangerous.
3. The physical condition of the patient is improved.
4. There is a rapid improvement in intramural adjustment.
5. It offers the best prognosis of any type of therapy in schizophrenia and involutional psychoses at this time.
6. It shortens the hospital residence of manic depressive cases.
7. The necessary expenditure is justified by the more hopeful prognosis in the schizophrenic group and the markedly decreased period of hospitalization necessary for the other groups.

Mental Disease and Modern Medicine*

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Ten thousand sick folks constitute a group equal in mere numbers to the population of a town of moderate size. At the conclusion of Virginia's fiscal year on June 30, 1939, there were under treatment in the State's six institutions for mentally sick folks 10,525 patients. One of the institutions is for the white mentally subnormal and the epileptic; another is for Negroes, the feeble-minded and the epileptic. The other four State hospitals minister to the mentally diseased—the so-called insane or the psychotic. Twenty-nine physicians, as members of the medical staffs of the six hospitals, have professional access to the more than ten thousand patients. Of that number of physicians six are Superintendents, each charged with directing the medical work of his hospital and with the administration of its affairs. The Superintendents are so busily engaged in their executive duties that they should have little time for clinical medical work. The actual diagnostic investigative procedures and the therapeutic ministrations must be carried out chiefly by the assistant physicians—twenty-three of them, for more than 10,000 sick folks. In the six institutions there are, in addition to attendants, women and men, without formal training, forty graduate nurses. During the last hospital year, ending June 30, 1939, there were admitted to the six institutions 3,414 patients. The cost of maintaining the institutions—all six of them—for that year was more than one million and three quarter dollars. Exactly, the maintenance cost was $1,831,388.79. The average cost of caring for a patient for a year was $175.85.

What do the figures say in every-day language about a great group of sick folks, confined in hospitals, in which few physicians have access to them? Often it is difficult, because of the patient's abnormal mental condition, to make a thorough and a satisfactory physical examination. It is often equally as difficult to investigate the patient's mental qualities—the intellect, the emotions, the spiritual state. Yet if a diagnosis is to be evolved a thorough study of each patient must be made. Such a study requires time, patience, skill. In the State hospital system there is one physician to every 360 patients—if the Superintendents be included in the apportionment. If they be not included 460 patients fall to each physician. The forty graduate nurses in the system allow one such nurse to every 260 patients. Ten patients are admitted each day to the six hospitals. The first step after admission of the patient is a thorough examination of body and of mind. But such a study requires time and skill. A patient is maintained for somewhat less than fifty cents a day. The allocation by the State of such a supporting fund for each patient must often provide clothing, as well as room, food, drugs, nursing and medical care.

Twenty-three physicians cannot afford adequate medical care to more than 10,000 patients and, in addition to that work, make comprehensive examinations of more than 3,000 new patients admitted during the year. Forty graduate nurses are almost lost in dilution in more than 10,000 patients. The facilities of modern medicine cannot be brought to patients for fifty cents each a day.

Is the State making any effort to bring the work of the State hospitals within the domain of modern medicine? What are the evidences of the effort? The general administration of the hospital system is thoroughly laymanized. The General Hospital Board is composed chiefly of lay people, untrained in nursing, in medicine, and wholly inexperienced in hospital administration. How can such a Board bring about improvement in a condition of which it has no understanding? If the State can afford modern hospital buildings why cannot it provide also modern medical and nursing service, fit in quality and adequate in quantity?

A bill introduced into the last General Assembly of Virginia would, if adopted, have created a Commissioner of Mental Hygiene and Hospitals. The bill purported to give the Commissioner large authority in exercising

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supervision over the State hospital system. But the Commissioner would have been the mere puppet of the Governor. He would have been appointed to serve "at the pleasure of the Governor" and his term of office would have been contemporaneous with that of the appointing Governor. The bill did not even require that the Commissioner should be a physician, and there were no intimations that he should know anything about psychiatry or about hospital administration.

The present State Hospital Board was to be continued under the new name of the Board of Mental Hygiene and Hospitals, but it was to be deprived of practically all duties and responsibilities. Most of the functions of the present Hospital Board were to be exercised by the Commissioner of Mental Hygiene and Hospitals. And the Commissioner was to be easily removeable by the Governor. Such an arrangement would have placed the State hospitals directly under the control of the Governor.

The supervision of the State hospital system is already thoroughly laymanized. Had the hopes of the Governor been realized through adoption of the proposed legislation the State hospital system would have become as thoroughly politicalized. But the General Assembly killed the bill as dead as Hector.

The activities of the State in reference to public health should be carried on under the auspicies of a Department of Health. For administrative convenience or necessity it may be advisable for several years to think of sickness of body and also sickness of mind. Such thought would express itself in two divisions in the Department of Health—a Division of Public Health (the present State Board of Health), and a Division of Mental Hygiene. Each Division should function under the supervision of a Director, each of equal rank and authority with the other. Sickness of body and sickness of mind do not easily separate and differentiate themselves in the patient. One does not experience sickness in pigeonhole fashion. Disease is unlikely to be limited in dysfunction to the kidneys, to the liver, to the emotions or to the psyche. A Department of Health would tend to encourage all of us to conceive of a human being as a biological totality, in whom disease—disturbance of function—may manifest itself either as psychic or as somatic poor health, or as both.

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out emotional states, the effects of which are disturbing to the smooth, balanced, automatic activities of organs and systems that constitute the individual and whose proper functions he depends upon for health and equanimity.

These disturbances and irregularities in organ functions lend themselves to disquieting sensations and discomforts that are voiced as complaints, taken to be symptoms, and expanded and falsely interpreted. Thus we see the origin of symptoms which are nothing more than symbols of visceral disorders that have behind them emotional factors at work. If these emotions are powerful and persistent, the organism has no choice but to make physiological, and even structural accomodations, the degree and permanency of which depends upon biological circumstances.

Through the central and autonomic and endocrine systems the emotions are closely tied up with muscle tissue. Skeletal muscles portray the presence of emotional states in terms of overt tension, or as mentioned before, in the form of attitudes and actions. However, smooth muscle tissue has a deeper and more fundamental tie-up with emotional states. When one thinks of the organs and systems whose vital functions and efficiency are dependent upon smooth muscles, he comes to realize the magnitude of emotional states when they are intense or persistent. Diffusion accounts for their stirrings over so wide a range, and the reason why certain organs bear the brunt often can be explained in terms of the history and uniqueness of that system itself. The careful evaluation of many vascular, gastro-intestinal, and genito-urinary symptoms in psychiatric patients will give convincing proof to these points; such disorders are legion.

Emotional factors may be at work in a "physically normal" person where organic disease is simulated; or in a "physically ill" person in whom they intensify and elaborate symptoms already present. To approach these

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disturbances therapeutically, it is evident that in addition to a knowledge of emotions and their nature, there must be an understanding of the make-up and life experiences of the person, and the environmental factors at work. Perhaps the most important thing of all is a willingness to think of the possibility of emotional factors at work, and how they disturb the physiological processes in that person and thus produce symptoms.

The importance of properly evaluating emotional factors cannot be overstated. To follow up such evaluation with ameliorating principles that time and tests have proved to be effective would naturally alleviate the necessity of alluding to many cases as "strange" and "unsettled". Accurate diagnosis and treatment demands a study of the whole person, and this predicates the proper attention to disorders of whole functions.

Surely there is no reason for the paradox about emotions and their effects.

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